## SCIENTIFIC ABSTRACT

There has been a marked increase in the use of autologous hemopoietic progenitor cells (HPCs) in patients with cancer, either as consolidation therapy for high risk patients or as salvage therapy for relapsed disease. The underlying rationale for this approach is that the availability of these stem cells for reinfusion allows the administration of intensive chemotherapy in situations where hemopoietic suppression would otherwise be dose limiting. This capability may allow a higher proportion of patients to be cured than would be possible with conventional therapy. The traditional source of HPC for transplantation has been the bone marrow. Over the past five years however, alternative sources such as peripheral blood and umbilical cord blood have been used increasingly to supplement or replace marrow. Peripheral blood stem cells, in particular, appear especially promising, as they contain a high proportion of lineage committed progenitors and may permit more rapid myeloid and platelet recovery than does marrow. However, it is still unclear whether peripheral blood provides equivalent long term recovery after autologous hemopoietic stem cell rescue and whether immune recovery is equivalent to that observed after marrow transplant. This is an important issue in determining the optimal source of stem cells for future gene therapy studies as long term persistence of transduced cells will be required. To directly compare reconstitution of hemopoietic stem cells derived from blood or marrow, we will mark CD34 cells derived from these two sources with the neomycin resistance gene in two distinguishable vectors. This will allow us to learn how quickly each portion engrafts and how long each portion survives in the patient. This information will allow us to learn which is the optimal source of stem cells for transplant and gene therapy applications.